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PREPARATION OF SYRUPS BY PERCOLATION.

By G. H. Chas. Klie.

The Pharmacopœia gives formulæ for twenty-three syrups. They are not all finished by the same process, but to dissolve the sugar different degrees of temperature are used. A few are finished by dissolving the sugar at a boiling heat, a portion by effecting solution with a gentle heat (90° to 100°F.), another portion by agitating a previously prepared tincture, from which the alcohol has been evaporated, with the sugar occasionally until solution is effected, and still another portion by mixing a fluid extract, solution or tincture with simple syrup. So we see that four different methods are directed, and it is striking that, except in a few only, the use of a high temperature appears to be avoided as much as possible. It seems that in these preparations the Pharmacopœia would have dispensed with heat altogether, if it had been sure that by adopting the cold process for all unexceptionable products would be obtained.

In the following the writer proposes to give some of his experience in regard to percolation (cold) of syrups, which has been practised in his establishment for about nine years with uniform good results.

Percolation, fifteen or twenty years ago, was among pharmacists a comparatively novel process; a good many even to this day regard it with aversion and suspicion because they think it more troublesome than the old process, and because they do not believe that by it as good and strong a product can be obtained. It is doubtful whether percolation was practised by a half dozen pharmacists of our city at the time mentioned above. Still, since its adoption by the Pharmacopœia, it has gained ground steadily, and those who practise it sufficiently long to find out its merits, especially for the preparation of fluid extracts, will not return to the old process for any consideration. To make a fluid extract the Pharmacopœia directs to exhaust some root, herb, etc., of a prescribed degree of fineness, by percolation. To

accomplish this so as to secure an unexceptional preparation requires not only the careful and judicious selection of the drug, but also due care in manipulation; in fact, it requires a considerable amount of experience. To make syrups by percolation successfully requires not nearly so much experience. If certain conditions in the construction of the apparatus are attended to the rapidity of the solution of sugar by the process varies only in so much as the menstruum may be more or less viscid. Since the Pharmacopœia directs to exhaust roots, herbs, gums, etc., by percolation, requiring quite an amount of care, attention and experience, why should not the simple solution of sugar be effected by the same process, since this, in comparison, requires little attention, furnishes a product unexceptional in appearance and superior in flavor (in such as have volatile ingredients) to those made by heat? Syrups are also made by agitating or shaking together the sugar and menstruum. But, in the first place, it takes longer to dissolve sugar by this process than by percolation, and, secondly, if any quantity of air is incorporated the tendency to spoil is accelerated. When syrups are prepared by boiling they, or at least quite a number, need constant supervision to prevent waste by boiling over; with ever so much attention to cleanliness, the straining cloths will still often be found defective, and when the hot syrup is strained into a glass vessel too much care can hardly be exercised to prevent breakage. Straining through even close cloth does not furnish an absolutely clear syrup. In percolation breakage of vessels by heat is out of the question, and the product has (when the process has been properly conducted) the perfect clearness attained by filtering through paper. When the simplicity and cleanliness of the process is contemplated, the conclusion is irresistible that it ought to have been adopted by the Pharmacopœia. Furthermore, it would be but consistent to direct the process by which the soluble parts of substances, apparently difficult of solution, are extracted, for the mere solution of sugar, which is not at at all difficult to dissolve. Percolation is also illustrated to perfection when sugar is dissolved by the process.

Percolation of roots, herbs, etc., with an aqueous, spirituous or ethereal menstruum, and that of sugar by water, an infusion, decoction, a partly spirituous or otherwise tincture, cannot be conducted in the same manner in every particular. Undoubtedly, because this has often been attempted failure was the result. Writer of this, about nine years ago, read in some pharmaceutical journal (I believe it was

the "Pharmacist," of Chicago) about the preparation of syruys by percolation, and thought the idea capital. The process was tried at the first opportunity with simple syrup. The percolator was charged, as usual, with a wad of cotton in the neck, a cork in the orifice, loaf sugar and water, adjusted on a filtering stand, and set aside until the sugar had all been disintegrated and settled. The cork was then removed, and it was expected that percolation would proceed without any trouble; but it did not. Having obtained 2 fluidounces of syrup in 12 hours the process was discontinued and the syrup finished by boiling. Using cotton wads for the percolation of syrups was found an utter failure. In subsequent operations sponge wads were substituted, and with entire success. A piece of common close, soft sponge is trimmed to a cone shape, ½, 1 inch or longer, and ½, 1, 2 or more inches diameter. The sponge is thoroughly washed and while still moist placed in position in the neck of a percolator, funnel or other suitable vessel by slightly compressing it. Sponges with small pores need little and such with large pores need more compression in adjusting. If it is placed too loose the syrup will pass too fast and not sufficiently clear, if placed too tight the syrup will pass too slow or not at all. The proper amount of compression is reached when the pores of a close sponge 1 inch long and ½ inch in diameter are closed in such a manner by adjustment in a ⅜ inch necked common half-gallon glass percolator that one pint of syrup will percolate in an hour. According to the size of the sponge, its compression, the size of the neck of the percolator, and its capacity, less or a great deal more may be obtained. When definite quantities of syrups are made, towards the end of the process the sugar must be heaped towards the centre of the percolator, because, since the process of displacement progresses faster in the centre over the orifice than at the circumference of the percolator, the sugar is dissolved fastest there, and when dissolved down to the sponge allows the menstruum to pass without dissolving the balance. In a continuous process this precaution is unnecessary. By percolation, when properly conducted, syrups are obtained absolutely clear, just as if filtered through paper.

Some of the syrups of the Pharmacoœia cannot be prepared by any other than the cold process, for instance syrupus allii, syrupus pruni virginianæ, and with these, as also with fruit syrups, percolation may be considered the *ne plus ultra* of perfection. In most of the syrups of the Pharmacopœia filtration can be combined with percola-

tion. For instance: It is not necessary to filter the aqueous tincture of orange peel when *syrupus aurantii corticis* is prepared, but after adding water to the evaporated portion, as directed, the turbid liquid may be immediately percolated with the sugar; or, for syrupus ipecacuanhæ, two fluidounces of fluid extract of ipecacuanha are diluted with 12 fluidounces of water and, without filtering, may be percolated with 26 troyounces of sugar for 32 fluidounces of syrup. In each case a transparent syrup results. *Syrupus scillæ compositus* may be prepared in two ways. The tincture of seneka and squill is prepared by percolation, then evaporated to half a pint and 14 ounces of water added, just as the Pharmacopœia directs. To this the tartrate of antimony and potassium is added, or the latter can also be dissolved in the water before mixing with the evaporated solution; the mixed solution is then percolated with 42 troyounces of sugar, and sufficient water is added through the percolator until the percolate measures three pints. Another method is, to use the fluid extract of squill and seneka, and proceed the same as above. Both methods furnish good products, only the latter contains some alcohol from the fluid extracts which the former does not.

Syrupus Ferri Iodidi.—The filtered solution of iodide of iron, prepared from 2 troyounces iodine, quant. sat. of iron and water, measuring 10 fluidounces, is percolated with 16 troyounces of sugar, and, if necessary, sufficient distilled water is added to make the product measure 20 fluidounces. In this instance a filtered solution is preferable, although one not filtered could be used.

The other syrups of the Pharmacopœia can be made in the same manner, using for each the tincture or aqueous solution, as directed, and then percolating with sugar, either the quantity prescribed or as much as the syrup ought to contain.

A goodly number of physicians prescribe *fruit syrups*, such as raspberry, strawberry, etc. The exquisite flavor of these is preserved to the possibly fullest degree by percolation. It is inexcusable for an apothecary to dispense, in prescriptions, the artificial preparations. During the respective seasons of the fruits any convenient quantity of fresh, ripe fruit is expressed, the expressed juice is allowed to ferment and percolated with sugar quant. sat. Strawberry syrup was prepared as follows: A gallon of fresh, plump fruit, after being pounded into a pulp of uniform consistency, in a porcelain mortar, was put into a

glass covered vessel and allowed to ferment. This, according to the state of temperature, may take from 3 to 5 days. To accelerate and complete the process of fermentation the vessel ought to be shaken once or twice a day, to reincorporate the mass which gathers on the surface of the juice. When fermentation has been completed this mass will generally settle to the bottom of the vessel. When the expressed fruit juice is fermented no shaking is necessary; but the work of gaining the juice by pressure is exceedingly tedious, on account of the gelatinous consistence (pectin) of the fruit, which allows the pressure to be but very slowly and gradually applied. If the pressure is applied sudden and powerfully, the press bag or cloth will be torn invariably. On account of this drawback it is more expedient to ferment the crushed fruit and then express. Fermentation can be observed and its cessation determined to a nicety if a glass bent tube inserted air tight in the cork of the vessel containing the fruit and its free arm is made to dip about one-half inch into water contained in a small glass vial, when the finishing of fermentation is indicated by cessation of evolution of carbonic acid gas escaping through the glass tube under water in small bubbles. The expressed, fermented juice from the gallon of strawberries measured 2¾ pints. This was percolated with 72 troyounces loaf sugar. The resulting syrup measured 5 pints. Raspberry syrup was prepared in the same manner. Of both syrups, prepared in the summers of '78 and '79, I have some on hand now, which, in the summer gone by, was exposed to a temperature of between 80° to 85° Fahr. without spoiling. To insure the keeping qualities of syrups prepared by percolation from fermented fruit juices, it is of paramount necessity to use only such juices in which fermentation has been complete. They (the syrups) ought also to hold in solution a sufficient quantity of sugar. Percolation regulates this to a nicety; by it as much sugar will pass into solution as can be conveniently held, and this is the best criterion of how much sugar a syrup ought to contain. Percolated syrups will not deposit any crystalized sugar in the bottles, except if they are exposed to a continuous low temperature.

The German Pharmacopœia directs heating to the boiling point for most of its syrups. It is asserted by some that syrups ought to be boiled, or heated to the boiling point, to effect precipitation of impurities. Our Pharmacopœia does not seem to be of the same opinion,

since, with the exception of only a few, it either employs a gentle heat (90° to 100° F.) or none at all. Furthermore, it is obvious that the use of heat would, in some of the syrups, totally destroy the medicinal properties for which they are generally prescribed, and in some which have flavors of extreme volatility these would be more or less impaired.

Lowell, N. St. Louis, Mo., Dec., 1880.

EXTRACTION OF COLCHICIA FROM THE SEED.

By Lemuel I. Morris.

Read at the Pharmaceutical Meeting, December 21st.

The powdering or grinding of colchicum seed has always been a source of much labor and annoyance to the pharmacist, and to overcome the difficulty, the purchasing of seed already ground has often been resorted to, a practice which does not commend itself to the profession, for the reasons that the powder is more expensive and can be very easily adulterated.

Dannenberg ("Phar. Ztg.," Oct. 30, 1880) has recently, in answer to an article by Dr. Molz ("Deutsch. Amer. Phar. Ztg."), shown that he obtained results contradicting the conclusions of the latter, who stated that colchicum seed, when more than a year old, was nearly worthless, and that colchicia could be extracted only by a strong alcoholic or acidulated menstruum, while he (Dannenberg) obtained the alkaloid reaction after boiling the seed, which was not less than five years old, for only a few moments in pure water. These different statements have led to some discussions on the subject and a desire to further investigate the matter.

To Dr. Hübler ("Arch. der Pharm.," 1865), it seems, belongs the credit of making the first statement that colchicia could be wholly extracted without powdering the seeds, by digesting them for some time in a hot 90 per cent. alcoholic menstruum. When afterwards powdered, and treated like the whole seed, it was found that the alkaloid had been entirely removed, and that very little if any soluble matter was extracted by the menstruum from such powdered seed.

Mr. Rosenwasser, in 1877 ("Amer. Jour. Phar."), after some experiments, found that only one-third of the colchicia was removed by macerating the whole seed, in officinal menstrua, for some time. Had

he employed a hot menstruum, he would have obtained different results.

Some of the whole seeds were obtained from a cabinet specimen of Prof. Maisch's, which has been in his possession for over ten years. Of this sample, 50 grams were macerated in cold dilute alcohol (sp. gr. ·941) for three days; a portion of the tincture was then evaporated to dryness, the residue treated with alcohol, again evaporated to dryness, treated with water, and filtered. The filtered liquid was tested with Mayer's test, after the addition of a few drops of nitric acid, when a yellow precipitate was immediately produced. The seeds were then well drained, and treated again with a fresh portion of the menstruum, when an additional amount of alkaloid was obtained. On treating them in a like manner for the third time, no more alkaloid was obtained.

They were then digested in dilute alcohol, with a moderate heat, for three hours, and on applying the usual tests a considerable amount of colchicia was found to be present. After well draining, they were again subjected to the action of heat and dilute alcohol, but no alkaloid was found present on testing the filtered liquid.

The seeds were now well drained, powdered and macerated in cold dilute alcohol for three days, when on testing a portion of the menstruum none of the alkaloid was found present, and the result was not altered by digesting in the same menstruum, with a moderate heat, for three hours, although a considerable amount of soluble matter was extracted. The tincture obtained from the cold maceration was evaporated to the consistence of an extract, and weighed 4·806 grams = 9·61 per cent. It was treated with alcohol until all the soluble matter was dissolved, the alcoholic solution was evaporated to dryness, the residue treated with water, the aqueous solution filtered, and the alkaloid precipitated by Mayer's test; the precipitate, carefully washed and dried, weighed ·093 gram = ·18 per cent.

The decoction obtained from digesting the seeds with hot dilute alcohol was then evaporated to the consistence of an extract, and weighed 2·0006 grams = 4·01 per cent. The extract was treated in a similar manner as the preceding, and the colchicia precipitate was found to weigh ·161 gram = 0·32 per cent., showing that nearly two-thirds of the active principle was extracted by the hot, and only one-third by the cold menstruum, the latter being the proportion also obtained by Mr.

Rosenwasser. In all cases, the extracts and precipitates containing the alkaloid gave the characteristic colchicia reaction with sulphuric acid and potassium nitrate.

Some of the whole seeds were then boiled in pure water; on testing the filtered liquid, colchicia was found present. The seeds were then powdered, again boiled in water, when, on testing the filtered liquid, the alkaloid reaction was not obtained, showing that the active principle was entirely dissolved from the whole seed by boiling water.

Statements have been advanced at various times to the effect that colchicia was precipitated along with the sediment that deposits from liquid colchicum preparations. The precipitated deposit was obtained from ten gallons of fluid extract of the seed, which had stood for six months. This sediment was carefully dried, washed with water containing about one-fifth its volume of alcohol until the washings passed tasteless, and then treated in the following manner: One-half of the washed residue was boiled with water acidulated with acetic acid, filtered, evaporated to dryness, treated with alcohol and water in the usual way, when, on adding the alkaloid test, not a trace of colchicia could be detected.

The balance of the residue was boiled in strong alcohol, filtered, the filtrate treated in the usual way; again no traces of colchicia could be observed.

The results of the different experiments lead to the following conclusions:

1st. That it is a waste of time and useless operation to powder colchicum seed, as the active principle can be wholly extracted by digesting them in the ordinary menstrua for a few hours, at a temperature of about 80°C.

2d. That alcohol stronger than dilute (sp. gr. ·941) is unnecessary for any of the liquid preparations of colchicum seed, since the whole of the alkaloid can be extracted with that menstruum, or even with water.

3d. That the active principle is so soluble in the menstrua directed in the different officinal preparations, that it is impossible for it to be precipitated from such solutions, either as colchicia or in the modified condition of colchicëin.

THE ORTHOGRAPHY OF THE UNITS OF THE FRENCH METRIC SYSTEM.

By Prof. Jos. P. Remington.

Read at the Pharmaceutical Meeting December 21st.

The adoption of the metric system, or at least its partial adoption, by the convention appointed to make arrangements for the revision of the United States Pharmacopœia, necessitates the consideration of the orthography of the units.

There would be no necessity for this consideration were it not for the fact that the tendency, under the guise of phonetic reform, to alter the original spelling is very marked.

The American metric bureau has rendered yeoman service in introducing the system into our country. The enterprise, energy and good business management which characterizes this agency is well known, and yet, in the writer's opinion, a great mistake has been committed in altering the original orthography of the units.

When the various countries throughout the world adopted the metric system certain changes were made in the names of the units and in the various denominations in a few nations, in order to adapt them to the language of each individual country, to satisfy a caprice, because of an antipathy to the French nation, or for some political reason. In the Netherlands, for instance, the metric system has been in use since 1871, but with Dutch names—strup, duim, elle, roede, korrel, lood, ons, etc. But can it be justly said that reason has been consulted in making the trivial changes that the United States proposes to adopt?

Metre, litre and gramme are to be changed to *meter*, *liter* and *gram*. It cannot be said that the change is made in order to conform to the language of the country, for we have no American language, and our mother-tongue, the English, resolutely rejects the parallel Americanisms *center* for centre, *theater* for theatre, etc., and thus the plea of common usage cannot be upheld, nor can it be said that the United States, as a nation, has any antipathy for the French, and the notion that politics had a hand in authorizing the change cannot be entertained here; it must have been *caprice*.

Let us look a little more closely at the individual changes proposed. *Meter* for metre.

It cannot be said that the Websterian innovation is any shorter, we have in each case the same number of letters. Webster, in his dictionary, gives both ways of spelling it. The Latin word, *metrum*,

and the Greek, *μετρον* (a measure), are the sources of its derivation; the same word in French is, of course, metre, pronounced mâ'tr. As a measure of length, and the foundation of the metrical system, the word belongs to the French, for it originated with them in this signification. Now why should the etymology be destroyed by an alteration which does not substitute a simpler word, but merely changes the position of the last two letters?

Besides this we have the well-known and common English word *meter*, which does not mean a measure, but a *measurer*, an instrument for measuring, as gas-meter, water-meter, coal-meter. Now, all will agree that one of the greatest faults of the English language is, that we have so many words spelt and pronounced alike, yet with different significations. Would it not be much better to keep *meter* for a measurer and retain *metre* for a measure? *Litre* is a French word from the Greek *λιτρα* (a silver coin) it is proposed to spell it liter, and there is even less ground for the change here, as the word litre originated entirely with the French, and was not known before they applied it to the measure of capacity in the metrical system. Yet probably, for consistency, so long as the caprice was decided upon in the case of metre, the last two letters here must be transposed.

Gramme, the unit of weight, is the only term which is shortened by the proposed change, the last two letters are to be entirely dropped, and it is to be spelt *gram*.

But we have a positive and serious objection to the use of this mutilated term in pharmacy; it unfortunately happens that the script letter *m* is very easily rendered *in*, and that this would frequently happen in reading prescriptions there is no doubt. Grams and grains differ greatly in value—one weight is fifteen and a half times the other, and in the dangerous transition stage which must come as the system is introduced—it makes one shudder to think that the life of a patient may then hang upon the clear and distinct dotting of the i. {*grams.*/*grains.*} On the other hand it cannot be said that abbreviations would be used, and that a physician would not write out either grams or grains, but abbreviate. This could not be done safely, as gr. is the abbreviation for grains, the difference between the abbreviation Gr., for grammes and gr., for grains is not sufficient to designate them. The only safe plan is to use the word *grammes* and spell it out, and instead of the decimal point use a decimal line. Every practical pharmacist can recall the moment of doubt and uncertainty during his professional life when the

prescription hastily written by the physician at the bedside of his patient (it may be under difficulties better appreciated than described) is presented to be deciphered; when the choice between the illy-contrived cabalistic characters ℥ and ʒ must be hastily and unerringly decided upon; the messenger is in haste, and hesitancy and delay are regarded as evidences of incompetency, and yet if there is to be an element of uncertainty about a new system, why throw away the old with which we are familiar to take up an imperfect new one.

The metric system has been adopted by the Pharmacopœial convention. The subject of orthography is by no means an unimportant one, and let us by all means retain the original words and keep the whole system in its perfection.

It is common in the English language to have the termination re—*meagre, massacre, ogre, acre, lucre, nacre, calibre, accoutre*—and even Bostonians, the inhabitants of that great centre of literary excellence, of which they are justly proud, where the Websterian innovations flourish best—still spell French words, which have been engrafted in the English language, with the original orthography, and they still go to the theat*re* and spell it *re* without a protest. We have hundreds of French words in our language that have become firmly established, and none will deny that they are elegant, expressive and forcible, whilst their extensive and growing use must prove that they supply a real need. Who would wish to discard such words as *depot, bouquet, beau, dessert,* etc., and how could their places be filled? and hundreds of others could be named if necessary. Prof. James Hadley, of Yale, in an article in Webster on a "Brief History of the English Language," after describing in a very interesting way the manner in which French words were introduced in our language, remarks: "In the schools it is stated that during the first half of the fourteenth century French was still used as the language of instruction and the medium for learning Latin, but that during the last half of the same century the English gradually took its place. Now, English, as spoken by the higher classes who learned it, would naturally be intermixed with French expressions. It would have been otherwise if they had regarded the English as a superior language, as having a finer nature, or a higher cultivation than their own. But they doubtless felt that by an intermixing of French they were enriching and ennobling an unrefined and meagre[1] idiom. Whenever the French word, which rose to their mind, bore a shade of meaning for which they had no equivalent in

[1] QUERY.—Why does one of the editors of Webster himself prefer in composition to use the *re* termination—meagre instead of meager—yet recommends others to use meager in the body of the book?

English, they did not content themselves with a loose expression, nor did they endeavor to form by English analogy one that should be exact; *they employed the French word itself.* They did this even when the English offered an equivalent expression, if the French word was particularly recommended by interesting or agreeable associations. *For words of a technical character they would scarcely think of seeking equivalents in English.* The body of the English people hearing from their superiors the French words with the Saxon, they naturally imitated and adopted them. Thus the new importations, bearing the stamp of elegance and fashion, passed from the circles of polite society into the language of the vulgar. They found free entrance into works of literature, not only because they *supplied real deficiencies in the English vocabulary,*[1] but also because they were especially familiar and acceptable to those classes whom the author would most wish to interest and please."

Now, having shown from abundant evidence that we have many precedents for the use of French words in our language with their original orthography retained, that the proposed changes do not, except in one instance—gram—shorten the terms, and that in this case the shortening is likely to be a dangerous experiment, there is yet another point of view in which the change is objectionable: These terms *metre, litre* and *gramme* have been established nearly a century; they are now in use by millions, representing the highest civilization of the world, and does it not seem petty and trivial to practically say: Yes, we Americans adopt the metrical system; it is perfect in all of its principles; the inter-relation of the standards is so unique; we have never had it in any other system, and Sumner was right when he crystallized its merits in the following language: "Universality, uniformity, precision, significance, brevity and completeness; a system of weights and measures born of philosophy rather than chance," and yet we must improve it *a little.* We have tried hard, yet cannot pick a flaw in its symmetrical proportions, nor suggest a change in its beautiful adaptation to our wants; yet there is one small chance left, we will phoneticize it, and confine our improvement to changing the spelling of the last two letters in the units. The French are, in all honesty, entitled to whatever credit is due for originating the most perfect system of weights and measures yet devised, and do not let us, as a nation, rob them of even this little leaf from their chaplet—*the original orthography.*

[1] Italics mine.

GLEANINGS FROM THE FOREIGN JOURNALS.

By Frederick B. Power.

Russian Quinia. By Dr. J. Biel.—A product bearing the name of N. N. Frolow stated as being produced in Moscow, has recently been placed in the market and has met, in Russia, with a considerable sale. It is offered in one ounce bottles, and from its non-captious appearance of light, voluminous white flocks, consisting of small crystalline needles, would tend to lead the unwary to the belief that Russian quinia, in alliance with Russian pepsin and Russian tannin, was now about to enter in successful competition with the products of other countries. The author, under the conviction of having a really serviceable preparation, applied the standard of officinal test with ammonia and ether, but was greatly surprised to obtain instead of two perfectly clear layers of liquid, a thick, white magma, which, even upon the addition of five times the amount of ether first applied, would not become clear. A solution of 0·5 gram of the salt in 10 cc. 95 per cent. alcohol, tested in the polarization apparatus, produced a deviation of the ray of light 5·6° to the right, instead of the rotation to the left as proper to quinia. The thalleioquin reaction was feeble, but clearly shown; with nitrate of silver an abundant precipitate was produced, and with chloride of barium only an opalescent turbidity. By its combustion on platinum foil no ash was left behind.

On drying at 100°C. the appearance of the crystals was not changed and but 6·6 per cent. of hygroscopic moisture was given off.

A quantitative examination, with a proper consideration and correction made for the amount of alkaloid remaining in the filtrate and wash liquid, as given by E. Johanson and Hielbig, gave the following result: Quinia 11·01, cinchonidia 5·56, quinidia 17·68, cinchonia 41·80 per cent. These amounts when calculated for the hydrochlorates give: quinia salt 13·48, cinchonidia salt 6·54, quinidia salt 20·66, cinchonia salt 51·64, moisture found 6·60 per cent—total 98·92 per cent.

As is seen, the preparation in question is a mixture of alkaloids corresponding to the substance long known under the name of *Quinetum*. While, however, De Vrij, from six varieties of commercial quinetum obtained 65·16, 34·72, 72·79, 84·86, 70·00 and 57·63 per cent. of tartrate precipitate, the preparation examined yielded but 17·12 per cent., proving it to be very inferior, as was also evident by its rotatory power, for, as De Vrij states, a good quinetum always rotates to the left.

A preparation of the above character and composition can therefore never replace quinia, and the author in conclusion refers to a point in relation to the therapeutic value of quinetum, as expressed by Dragendorff in "Jahresbericht," 1876, p. 140, in consideration of the amount of cinchonia contained therein; it being accepted by him as indubitable that of all the known cinchona alkaloids the cinchonia is the furthest removed in its action from quinia, as evidenced by its peculiar action upon the spinal marrow, and that dogs and cats, after having been given not very large doses of cinchonia show the tetanic spasms the same as in the case of strychnia.

The above description and composition of the so-called *Russian quinia*, which is said to be sold at a considerably lower price than the pure preparation, an allurement to many purchasers, will serve as an ample and timely warning.—*Pharm. Zeitschrift für Russland*, No. 20, 1880, pp. 625—627.

THE CAUSE OF MALARIAL FEVER.—The studies of Tomassi and Klebs in a fever district have led to the discovery that a microscopic fungus exists in the atmosphere and in the soil, consisting of movable shining, oval spores. The fungus was injected under the skin of dogs with the result of producing malarial fever, with intervals of repose, for sixteen hours, elevation of the temperature to 42°C. (107·6F.) and enlargement of the spleen, in which, as also in the lymphatic vessels a large amount of the fungus in its characteristic form was observed, and to which the name of *Bacillus malariæ* has been given.—*Ibid., from Journ. de Pharm. et de Chim.*, Ser. 6, Tom. 2, p. 42.

THE PRODUCTION OF ATTAR OF ROSE in Rumelia during the present year has been attended with admirable success and the income is estimated to amount to more than a million francs, although the roses yielded less of oil than in 1876, when the best harvest of the past decenium was obtained. 300,000 metikals (208 metikals = 1 kilogram) of the attar, possessing a value of 923,077 francs, were exported from Philippopolis, of which three-fourths of this quantity was produced in the district of Kisanlik, and one-fourth from Eski Zaghra and Philippopolis. The exportation is chiefly to France, Austria, America and Germany. The French perfume manufacturers, and particularly the Parisians, buy only the first quality of attar, Austria and America purchasing, as is stated, the second quality, while the demands of the English perfumers for attar are supplied chiefly by the East Indies. The prices vary from 15 to 22 piasters per metikal (= 4 grams).—

Ibid., No. 22, 1880, from *Rundschau für d. Interesse d. Pharm. Ch., etc.*, 1880, p. 546.

On the Examination of Reduced Iron. By O. Wilner, of Stockholm.—Upon the basis of a large number of researches executed in the Pharmaceutical Institute of Stockholm, fully detailed in No. 15 of the "Farmaceutisk Tidskrift," August, 1880, the author makes the following series of practical deductions:

1. The amount of metallic iron in reduced iron can be accurately determined by treatment with mercuric chloride and titration with potassium permanganate.

2. If metallic iron is treated by the aid of a gentle heat with an excess of a concentrated solution of mercuric chloride, mercurous chloride and metallic mercury are separated, and the metallic iron passes as ferrous chloride into solution; the ferrous and ferric oxides which may be present remain undissolved, and therefore do not prevent the estimation of the amount of metallic iron in the reduced iron.

3. The amount of ferrous oxide in the preparation may be estimated by treating the same portion with hydrochloric acid, digesting the mixture in a closed vessel until the finely divided ferrous oxide becomes dissolved, and titrating with potassium permanganate.

4. The ferric chloride which is thus formed at the same time has no appreciable action upon the precipitated metallic mercury and mercurous chloride.

5. The general acceptance of the opinion of Flückiger that reduced iron is a mixture of metallic iron with ferroso-ferric oxide, and upon which a method for the estimation of the amount of metallic iron is based, by its conversion into oxide and weighing the latter, is considered by the author as incorrect, the preparation being assumed to be rather a mixture of metallic iron with ferrous and ferric oxides in varying proportions.

Of three specimens of reduced iron examined the following composition was determined:

	No. 1.	No. 2	No. 3.
Fe,	74·88 per ct.	21·35 per ct.	34·44 per ct.
FeO,	11·58	12·59	60·38
Fe_2O_3,	11·07	65·41	2·16
Impurities and loss,	2·47	0·65	3·02

All three contained small amounts of substances insoluble in hydrochloric acid, as carbon, quartz, etc.—*Pharm. Zeitung*, 1880, p. 705.

CHEMICAL NOTES.

By Professor Samuel P. Sadtler, Ph.D.

Inorganic Chemistry.—*On the Specific Gravity of the Permanent Gases at High Temperatures.*—As a result of the recent experiments of Victor and Carl Meyer, and of Crafts and Troost, on the specific gravity of chlorine, bromine, and iodine at high temperatures, Messrs. Troost and Berthelot have expressed the opinion that the prevalent view of the possession of uniform coefficients of expansion by the permanent gases would have to be given up. Victor Meyer has just determined the specific gravity of hydrogen at the highest temperature attainable, and finds that it is perfectly regular and normal even at these high temperatures. He, therefore, does not share the opinions of Messrs. Troost and Berthelot, but enumerates the following gases and vapors that possess a regular coefficient of expasion even at the highest attainable temperatures:

Tellurium (Deville and Troost),	Nitrogen,	V. & C. Meyer.
Sulphur (Deville and Troost; V. & C. Meyer),	Oxygen,	
Hydrochloric Acid, Carbon dioxide, (Crafts),	Mercury,	
	Arsenious Oxide,	
Hydrogen (V. Meyer and H. Züblin).		

—*Ber. der Chem. Ges.*, xiii, p. 2019.

Atomic Weight and Equivalence of Beryllium.—The question of the equivalence of Beryllium and, of course, with this the matter of its true atomic weight is again the subject of considerable controversy. Berzelius considered its oxide to be Be_2O_3, and this was generally conceded until Mendelejeff's classification of the elements put Beryllium in the class of dyads, making its oxide BeO, and its atomic weight 9·2 instead of 13·6 as previously regarded. So strong has the belief in this law become among chemists that when Prof. Emerson Reynolds, some two years ago, made a determination of the specific heat which apparently established the atomic weight 9·2 and the oxide as BeO it was almost universally accepted. The Swedish chemists, Nilson and Petterson, very shortly afterwards re-determined the specific heat, taking much more thorough precautions against error, and gave as their result an atomic weight of 13·65 and Be_2O_3 as the formula of the oxide. Their results were attacked by Prof. Lothar Meyer and others, who still adhere to their belief in the formula BeO largely on theoretical grounds. Nilson and Petterson have now gone over the whole ground again and show that their former results are confirmed and present new

experimental proofs of the correctness of their determinations. So that the weight of experimental proof seems to be in favor of Be_2O_3, and an atomic weight of 13·65.—*Ibid*, p. 2035, and also *Chem. News*, Nov. 26, 1880, p. 262.

A new Process for the Preparation of Malleable Nickel of various degrees of Hardness.—Pure nickel, after fusion and casting, contains more or less oxygen and is in consequence brittle. J. Garnier has sought to overcome this by the addition of an element which would combine with the oxygen and, at the same time, with the nickel in sufficient degree to remove the brittle character. Manganese was tried and found unavailing, as the brittle character was not permanently removed thereby. Phosphorus was found to answer unexpectedly well, and most excellent results were obtained. It appears to act with nickel in a manner analogous to the action of carbon in iron. If phosphorus, to the amount of 1 in 3,000, be added to the nickel, the metal becomes soft and very malleable; with larger additions of phosphorus the hardness is developed at the expense of the malleability. It is conveniently added to the nickel in the form of a phosphide of nickel containing six per cent. of phosphorus, which compound is readily obtained by fusing a mixture of calcium phosphate, silicic acid, carbon and nickel. Not only is the nickel so treated with phosphorus malleable in itself, but its alloys with copper, zinc or iron are malleable and soft, while perfectly compact and free from gas bubbles.—*Comptes Rendus*, vol. 91, p. 331.

Constitution of the Tartrates of Antimony.—F. W. Clarke and Helena Stallo have made a study of the compounds which, like tartar emetic, are assumed to contain the group antimonyl (SbO), and come to the conclusion that they are not tartrates proper, but salts of a complex acid called tartrantimonous acid. They analyzed the barium salt formed by adding barium chloride to tartar emetic solution, and prepared also corresponding zinc and cobalt salts, the percentages of the metals found in these compounds corresponding fairly to that demanded by theory. They attempted to prepare the free acid by precipitating the barium out of the barium salt, but found the acid very unstable, so that when the barium was removed it rapidly decomposed, depositing a white pecipitate, which proved to be $Sb(OH)_3$. Their theory as to the constitution of tartar emetic, then, is that it is the potassium salt of an acid in which the dyad radical $C_4H_4O_6$ enters, replacing two groups, OH, of the antimonous hydrate $Sb(OH)_3$, thus:

$Sb\{^{OH}_{OH}_{OH}$ $Sb\{^{C_4H_4O_6}_{OH}$ $Sb\{^{C_4H_4O_6}_{OK}$

Antimonous hydrate or acid. Tartrantimonous acid. Potassium tartrantimonite (tartar emetic).

—*Am. Chem. Jour.*, vol. 2, p. 319.

ORGANIC CHEMISTRY.—*Synthesis of Salicylic Acid.*—Edgar F. Smith has made a most interesting experiment resulting in the synthesis of salicylic acid. One part of copper benzoate was heated with about 3 parts of distilled water, in a sealed tube, at a temperature of 180°C., for three hours, when a large quantity of cuprous oxide separated. After pouring out the contents of the tube, acidulating and removing the copper by hydrogen sulphide, the solution was distilled, whereby some undecomposed benzoic acid distilled over with the steam. The residual liquid, evaporated down, yielded a crystallization of needles, fusing at 156°C., and giving with ferric chloride the characteristic coloration of salicylic acid. Several of its salts were also formed and identified. The reaction is as follows:

$$2(C_6H_5.COO)_2Cu+2H_2O=Cu_2O+3C_6H_5.COOH+C_6H_4OH.COOH$$

Copper benzoate. Benzoic acid. Salicylic acid.

—*Am. Chem. Jour.*, vol. 2, p. 338.

Synthesis of Tropic Acid.—Ladenburg's preparation of homatropin and other artificial alkaloids from tropic acid, one of the decomposition products of atropin, has already been noticed (this journal, 1880, p. 402, 450). He has now, after some trials, succeeded in making a synthesis of tropic acid itself, building it up from simple benzol derivatives. Dichlor-ethyl benzol, $C_6H_5.CCl_2CH_3$, served as the starting-point. This was converted, by treatment with potassium cyanide in alcoholic solution, into $C_6H_5.C(CH_3)(OC_2H_5)(CN)$, and this with barium hydrate and water into $\left(C_6H_5.C(CH_3)(OC_2H_5)(CO.O)\right)_2Ba$, giving the free acid, $C_6H_5.C(CH_3)(OC_2H_5)(COOH)$, which, on treatment with hydrochloric, yields atropic acid. Atropic acid, however, Ladenburg had previously changed into tropic acid, so that the synthesis is complete.—*Ber. der Chem. Ges.*, xiii, p. 2041.

A New Synthesis of Chinolin. Skraup finds that chinolin results when either nitro-benzol or anilin are heated with glycerin and sul-

phuric acid, a mixture of the two yielding the best results. The reactions are:

$$C_6H_5NO_2+C_3H_8O_3=C_9H_7N+H_2O+O_2$$
$$C_6H_5NH_2+C_3H_8O_3=C_9H_7N+H_2O+H_2$$

The author hopes, by treating glycerin with nitroethan and ethylamin and their homologues, to obtain pyridin and the homologous bases.—*Ibid.*, p. 2086.

Examination of the Products obtained in Roasting Coffee..—Bernheimer gives the following as the products:

Chief Products.	Minor Products.
Palmitic acid, about 48 per cent.	Hydroquinone.
Caffeina, 0·18 to 0·28	Methylamin.
Caffeol, 0·04 to 0·05	Pyrrol.
Acetic acid,	Acetone (?).
Carbonic acid gas.	

The caffeol is an oil, boiling at 195° to 197°, which possesses the aroma of coffee in a very high degree. It has the composition $C_8H_{10}O_2$; it unites with concentrated potassium hydrate solution, is oxidized by fusing caustic potash or potassium bichromate and sulphuric acid to salicylic acid, and shows a great tendency to resinify. The author therefore concludes that it is a methyl ether of saligenin. The coffeetannic acid appears to remain behind in the beans to a great extent on roasting. It can, however, still be considered as the source of the caffeol, as on heating it gives a coffee-like odor.—*Wien. Acad. Ber.*, 81, ii, p. 1032.

Rapid Preparation of Certain Syrups and Medicated Waters.—*Editor American Journal of Pharmacy*—Allow me to describe a short cut to certain syrups, for example, tolu, ginger, etc.

Agitate the tincture or essential oil with a little precipitated chalk, with the proper quantity of water, heated nearly to boiling, in a suitable bottle, for a few minutes; throw upon a filter placed in a bottle containing the sugar.

The hot solution filters rapidly, and a few minutes' shaking completes the syrup, which may be readily strained through a small sponge in the neck of the funnel. This process was born of necessity, a supply of syrup of tolu being wanted in a hurry, and I find it to work admirably.

The same idea will serve in making medicated waters, in the absence of a still or when time presses.

Yours very truly, THOS. D. MCELHENIE.

Brooklyn, N. Y., Dec. 6th, 1880.

ON THE DEVELOPMENT OF ALKALOIDS IN DEAD BODIES (PTOMAINES).

BY BROUARDEL AND BOUTMY.

Translated from "Journal de Pharmacie d'Anvers," Nov. 1880, pp. 444 to 446, by FREDERICK B. POWER.

If the organs of an individual, asphyxiated by carbonic oxide, be analyzed some hours after death they will be found free from poison, but if the same viscera be examined eight days later it will be found that they contain a solid organic base, presenting the general characters of the alkaloids, and capable, when given in small doses, of killing frogs and guinea pigs. It is thus certain that the process of putrefaction gives birth to organic alkaloids, even independent of cases of poisoning.

In the second case the authors discovered a poisonous ptomaïne in a subject, poisoned by arsenious acid, in this respect in perfect accordance with the observation of Professor Selmi of Bologna, who, in 1873, met with the same ptomaïne in the bodies of two persons who had died of arsenical poisoning; it is thus seen that the formation of the ptomaïnes can take place in individuals who have died without the administration of poison as well as those who have been infected, and that even when the toxic substance, as in the case of arsenious acid, possesses strongly antiseptic properties.

It can now be foreseen the importance of the ptomaïnes to medico-legal experts, the interest which the study of their mode of formation, their nature and their composition presents, and in the case of an investigation demanded by justice, the means to be employed to prevent their formation in the space of time which inevitably intervenes between the autopsy and the moment when the analysis of the viscera is commenced. The first results at which Brouardel and Boutmy have arrived in this investigation are as follows:

The general properties of the ptomaïnes are those of the organic alkaloids, and, most commonly, their toxic action is not less than that of the most energetic poisons.

There exist several distinct ptomaïnes which present a decided difference in their chemical and physiological properties, some of them being violent poisons, while others possess no toxic action, but as a general rule it may be said that in six cases out of ten the ptomaïnes are poisonous.

Each case of putrefaction does not appear to give birth to distinct ptomaïnes, for the authors have found the same alkaloid in the bodies of individuals who had died under absolutely different conditions;

an opportunity having been afforded, for example, of confirming the existence of the same ptomaïne in the bodies of two individuals, the one poisoned by carbonic oxide, the other by prussic acid.

The ptomaïnes are most commonly volatile; however, cases may exist in which they present a permanent character. Brouardel and Boutmy having indeed found a ptomaïne, analogous to veratria, in a body which had reposed for eighteen months in the water of the Seine, and another in a goose which had been exposed to the action of heat necessary for cooking.

The ptomaïnes, or at least certain ptomaïnes, have a toxic action on man. It has indeed been confirmed that twelve persons who had dined on a tainted goose, and which contained a liquid ptomaïne analogous to codeina, experienced all the symptoms of serious poisoning, one of them succumbing in a few hours after suffering from nausea and repeated vomiting, and without any other fact existing for the explanation of death than the absorption of the ptomaïne, from which it may be concluded that the ptomaïnes are capable of producing death in man as well as in animals. It does not require any considerable time for the ptomaïne to be formed, for in the last instances the goose had been bought at the market on the same day on which the poisoning took place, and had been subjected to the regular inspection. The case of the individual who had died of asphyxia, and in which the ptomaïnes appeared at the end of eight days, is likewise a proof of the rapidity with which they may be developed.

According to the authors, the most efficacious means of retarding the formation of ptomaïnes is exposure to cold, and at the present time the morgue of Paris is provided with chambers, refrigerated by cold air, in which bodies may be preserved without undergoing secondary changes until the moment when the expert is able to proceed.

These are the first results of long and difficult labors which Brouardel and Boutmy have undertaken; facts will accumulate in their hands which will result without doubt in solving the serious difficulties which have arisen for the medico-legal expert by the discovery of the ptomaïnes.

Since the publication of the above article a valuable and interesting essay on "the ptomaïnes and their importance in judicial chemistry and toxicology" has appeared from the pen of Prof. Th. Husemann, embracing some of their physiological and chemical characters. Being too extended in its details for translation, those interested in the subject may refer to the original article as contained in "Archiv der Pharm.," 1880, Band xiv, pp. 327 to 346.

NOTES ON CITRIC AND SALICYLIC ACIDS.

By F. C. Clayton.

In the "Standard" of September 14th there appeared the following paragraph:

"For the period during which the autumn manœuvres will last near Berlin large quantities of citric acid have been served out to the troops of the guards and third army corps who are taking part therein. The experience of previous years has shown that this material is not only an excellent preservative against sunstroke, but, dissolved in water, makes a refreshing drink. Another chemical preparation which has been distributed among the troops at the manœuvres this year is salicylic acid, in the form of a powder, an excellent remedy for such maladies of the feet as soldiers mostly suffer from."

As a manufacturer of citric acid I was naturally interested in obtaining some further information as to this new use for it as a preservative against sunstroke, and more especially as my friend Mr. D. W. Greenhough, chemical broker of Mincing Lane, had previously informed me that he had purchased 120 tons for the use of the Russian army during their campaign in Turkey three or four years since.

I therefore wrote to the foreign office authorities, enclosing a copy of the above paragraph, and asking them to obtain further information on both acids at Berlin and St. Petersburg, which they have kindly done through our representatives there. That information is as follows, and it will be seen that the statement as to the use of citric acid in the above campaign is contradicted, but Mr. Greenhough is confident that the purchase was intended for the Russian army though it may never have been used:

"Memorandum.

"*Germany.*

"No citric acid has been issued to the men in the guard corps and in the third army corps, only to the twenty-fourth regiment.

"One junior surgeon in this regiment gave it to some of the hospital orderlies for them to give to such people as should require it when exhausted on the march. It is considered to be a refreshing drink in hot weather, of a better flavor than water with vinegar, which has been given for years to men who begin to be affected by the heat.

"The surgeon-general in the guard corps states that there is no decided proof of the benefit of this acid against sunstroke, but it seems to have answered in the twenty-fourth regiment.

"The salicylic acid is used. It is in the shape of a powder, and a great preventive against perspiring and sore feet.

"*Composition.*

"Acid salicylic,	3 parts.
"Amylum,	10
"Powder of talcum,	87

"It is applied dry; on a march daily; in garrison every two or three days. It takes off the irritating influence of the perspiration of the feet, and prevents in consequence the soreness.

"In the Italian army anise-seed and 'Zambuco' are similarly used in hot weather.

"*Russia.*

"Citric acid was not used by the imperial troops during the Russo-Turkish war, but was first employed last year to make palatable and wholesome a quantity of spoilt cabbage. It helps considerably the progress of fermentation in making the soup known as 'stchi.'

"It has also been employed lately by the troops on service in Central Asia to make drinkable the brackish water found in the desert.

"The amount served out is one pound per hundred men, supplied in its crystallized state, but it is only under exceptional circumstances that the acid is employed in the imperial army.

"Citric acid has never been used in Russia in case of scurvy; it is supposed to be too weak to act as a curative, or even as a preventive against that disease, and would require, at all events, vegetables and fresh meat to be of any use under such circumstances.

"The acid in question is made of Italian lemons in the military medicine establishment; there is no special factory for it in Russia, nor is it imported.

"Salicylic acid appears to be of no use whatever as a remedy for foot sores; it is used only as a disinfectant, but has no curative properties.

"Bandages are steeped in salicylic acid to prevent infection."

—*Phar. Jour. and Trans.*, Nov. 20, p. 411.

NOTES ON PATCHOULI.

By J. Ch. Sawer.

The identity of the plant furnishing this perfume has been the subject of articles in this journal since the year 1844 ("Phar. Journ.," [1], vol. iv., p. 80; vol. vi., p. 432; vol. viii., p. 574; vol. ix., p. 282, and iv. [3d series], p. 362), but the first mention of it in a pharmaceutical paper seems to be in the "Journal de Pharmacie," 1826, (vol. xii., p. 61). The first parcel of the leaf offered at public sale in London was in 1844, and it was bought in at 6*s.* per lb. Since that date the trade in these leaves and the oil has enormously increased, the number of bales imported into London during the last twelve months having been from 300 to 400 bales of 2 cwt. each. It is stated by Dr. Piesse that "its consumption in the perfumery trade of Europe

is something beyond belief ("Garden," Nov. 24th, 1877), and in the last edition of his work on perfumery he says that "were the otto cheaper its consumption could be increased tenfold." This book is dated 1879; the average price, first-hand, during that year was 3*s.* per oz. in London; it is now only 1*s.* 7*d.*, and leaves have been sold at from 3½*d.* to 9*d.* per lb., according to the quality.

The bulk of the enormous quantity of leaves harvested and of the oil goes direct from its place of production to Mecca, the Arabs believing in its health-giving properties and in its power of warding off fever and sickness. During the last five years China and Japan have adopted it for similar reasons. As a perfume it has much more popularity amongst Orientals than amongs Europeans; still, if the European consumption alone increases in the ratio predicted by Dr. Piesse, consumers will naturally inquire into the causes which influence so large a market, held in a few hands and based on the supply of a plant of which very little is known in Europe.

The generally accepted name, "*Pogostemon patchouly*," originated by Pelletier-Sautelet ("Mém. de la Soc. Roy. des Sciences d'Orleans," V. n. 6, 1845, and Benth. in De Cand. "Prodr.," xii., p. 153; also Hooker's "Journ of Bot. and Kew Mis.," i., pp. 22 and 328), and the minute botanical description of that plant given by him in vol. viii. of this Journal, may apply to a variety of the true plant yielding a somewhat similar perfume, but the plant as it grows wild in Province Wellesly does not flower; neither does the variety which is cultivated at Singapore. Still Bentham was of opinion that Pelletier's plant was identical, or not really specifically distinct from his *Pogostemon intermedius* ("Wal. Cat.," 2327), of Silhet, Penang and the opposite shore of the Malay peninsula, or from *P. parviflorus* of Silhet, Assam and Saharunpur, or even from *P. Heyneanus* of Ceylon, Java, etc., which Drury describes as "probably merely a variety with larger spikes and more drooping in habit," and says that it is found wild in the Concans, and that it is probably Rheede's synonym "cottam," ("Hort. Mal.," x., t. 77).

Apparently there are several varieties of this plant. It is found in many other places than those above named; in Ceylon, China, Java, Mauritius, etc. Its native locality may not have so wide a range, but it has most likely been introduced for cultivation at many of those places. The plant does not grow to any extent on the island of Penang, but a plant said to have been obtained from thence was intro-

duced into the botanic garden at Calcutta, and during ten years showed no disposition to blossom. Other specimens flowered in the stoves at Kew and Orleans; others received from Louis Van Houtte of Ghent, and grown in the moist stove here, have not attempted to flower, although they otherwise throve exceedingly and agreed in the structure of leaf and stalk with the figure of the Kew plant. The only variety known to flower (if really it be a variety of the same plant) grows on one of the islands near Sourabaya, south-east of Sumatra; the leaf is odorous, though not so broadly ovate and with shorter pedicels, and it is grown simply for the flowers, which are sold in large quantities for medicinal purpose in the various markets of Java, and fetch a high price.

The difficulty of obtaining accurate botanical details of these plants is great, but there are no doubt many varieties, and all labiate plants, especially the mints, are apt to take a character and habit not true to the original plant, when transplanted to a climate or soil other than is natural to them; and under such conditions the development of odorous properties is as much changed as is the development of medicinal properties in many drug-yielding plants. To instance the former I may mention the lavender and the peppermint, and regarding the latter, Dr. Hooker observes, in the introductory essay to his "Flora Indica," that the most conspicuous Indian examples are presented by the opium poppy, mudar (*Calotropis*) and the *Cannabis sativa* or common hemp of England, which yields "bhang" and "chirris" in varying quantities and of different quality very much in proportion to the humidity of the soil and climate it grows in. The digitalis grown in the Himalaya is said to have proved almost inert, and so with other plants which have been cultivated for medicinal and economic purposes. The wood of the English-grown Lebanon cedars differs greatly in color, hardness and odor, and the wood of the English oak grown at the Cape of Good Hope is worthless. The patchouli plant cultivated at Singapore is of course not propagated by seed, as it never flowers. It may be a hybrid, and if its difference of odor be not attributable to this cause it may be to the drying, fermenting and distilling processes being carried on in a different way to that adopted in Province Wellesley. These reasons may also account in some measure for the differences observed in the Chinese oil of peppermint.

Inquiring into the causes which influence the price of any volatile oil, we find that besides supply and demand, quality is considered,

depending on freedom from adulteration and careful manufacture, whether derived from stale or recent plants, and particularly on the variety of the plant from which it is produced. Whether in the case of patchouli there are plants differing specifically or not, it is certain that there are varieties, arising perhaps from hybridization, cultivation or climatic influence, and there are still greater differences in the aroma of the oil, arising either from method of production or adulteration. The bales which now arrive in London are mostly from Province Wellesley, and consist of leaves and woody stalks (too large a proportion of the latter) of the wild variety known as "*Doun Tilâm Utan*," *Doun* signifying leaf, *Tilâm* bed or mattress, also including the idea "health-giving," and *outan* "wild," meaning that the natives stuff their beds and pillows with the leaf and believe in its health-giving and life prolonging virtues. Now, even assuming that these bales consist of this plant alone, unadulterated with leaves of any other plant, that they really have been properly cured and dried, and do not turn mouldy or rancid in transit and arrive sound and unseadamaged, and that during the time they are stored in warehouse in London they escape dampness (which the leaf is remarkably apt to absorb), the oil which is afterwards distilled from these leaves differs in aroma from that distilled from the leaves on the spot immediately after the final drying process. The majority of the bales imported are re-shipped to a German port and the oil distilled from them is said to be often adulterated to the extent of even 60 per cent., with cheaper oils, mostly with those of cedar and cubebs. [It is remarkable that these have been selected as adulterants, as the camphor of patchouli is isomeric with that of cubebs and with the concrete oil of cedar.] ("Comptes Rendus," January 8, 1877.)

The method of cultivation of the plant and preparation of the oil, as practised by Mr. Fisher of Singapore, is as follows: The variety selected for cultivation is known locally as *Tilâm Wangi* (meaning "fragrant"), obtained from the island of Rhio, near Singapore, in the Straits Settlements. The soil most suitable is a rather stiff clay with only a small percentage of silica, and land of this description found near the coast (containing traces of marine deposits) is planted in rows about 4 or 5 feet apart. The plants are propagated by cuttings struck in the open air, which until rooted, are sheltered from the sun by pieces of cocoa-nut shell. The harvest is made in dry weather and when the sun has drawn up the dew from the leaves; the tops and

green parts of the plant are broken off by hand, rejecting all yellow or decayed leaves and all the woody stems. The selected parts are then dried in the shade under large sheds (as the sun would draw out the perfume), and to ensure evenness in drying, they are spread on bamboo racks, allowing the air to penetrate from beneath. During this process they are frequently turned over, and when so far dried as to leave just sufficient moisture to permit a slight fermentation, they are piled in heaps and allowed to heat gently; after this they are again spread out and dried—but not to absolute dryness—and are immediately distilled. The addition of about 25 per cent. of the wild herb "*Tilâm outan*" is said to increase the fragrance of the distillate. The distillation is effected by passing steam generated in a boiler apart through the leaves in the stills. The pressure of steam is not allowed to rise above 30 lbs. The yield, under these conditions, being about ¼ oz. per lb. of leaves; by high pressure steam the yield would be greater but more rank in quality. The stills are sometimes jacketted, and by passing a separate current of steam into the jacket condensation in the body of the still is avoided. Operating on specimens of leaf recently imported into London, I have observed that at the commencement of the distillation a small portion of pale colored oil passes over, lighter than water, and of a more delicate aroma than the heavy oil; but the heavy oil was rank. The Singapore oil is sent to London in cases of twelve bottles containing 22 ounces in each bottle, labeled with the manufacturers' name and guaranteed by him to be pure. From London it is sent to merchants and manufacturing perfumers in all parts. Obviously such oil is more likely to be pure and of better quality than an oil distilled in England, France or Germany from the baled leaves and without a reliable pedigree. The oil described as "French" oil has a different odor to the genuine leaf, and has not the peculiar olive-brown tint of the Singapore oil.

An examination of oil of patchouli was made in 1864, by Dr. Gladstone ("Journ. Chem. Soc.," series 2, vol. iii.), on a specimen obtained from Dr. Piessse, and believed to be quite genuine; also on a specimen obtained from India. Both specimens were brownish-yellow and slightly viscid. They began to boil at 257°C., at which temperature nearly all distilled over, and was found to be a hydrocarbon analogous to that from cubebs, but towards the end the thermometer rose much higher, and the distillate became of a deep blue color, owing to the presence of an intensely blue matter termed "azulene" or "cœrulein,"

which is also found in the oils of *Calamus aromaticus*, *Matricaria chamomilla*, *Artemisia absinthium*, *Achillea millefolium*, and in small quantity in the oils of bergamot and Ceylon lemon-grass. The analysis of this remarkable fluid shows its formula to be $C_{16}H_{13}O$ (and not $C_{12}H_{13}O$, as stated by Piesse at page 58 of his last edition). Its boiling point is 576°F., and its sp. gr. ·910. There are but few liquids which give a colored vapor when boiled, but azulene is one of them. Like itself its vapor is blue. It is soluble in and imparts its color to fatty and volatile oils, alcohol and many other liquids, but not water. It is very permanent, and bears a temperature of 700° to 800° F. in a sealed tube without alteration, and none but the strongest acids aided by heat will break up its constitution. It is most intensely blue, appearing almost black when in a concentrated state. It is not decolorized by sulphurous acid, sulphuretted hydrogen, or bromine water. It does not attach itself to animal charcoal, nor does it dye wool, cotton or silk. It has been found to exist to the extent of 6 per cent. in the pure oil.

When left at rest oil of patchouli deposits a crystalline body, known as camphor of patchouli, in regular hexagonal and pyramidal prisms. The composition of this camphor has been stated as $C_{30}H_{28}O_2$ by Gal ("Bul. de la Soc. Chim.," 1869, p. 304), but by Montgolfier ("Comptes Rendus," January 8, 1877, p. 88), as $C_{36}H_{26}O_2$, which would constitute it an isomer of camphor of cubebs and of concrete essence of cedar. The conditions most favorable to the formation of this body are little known, but it has been remarked that it forms more rapidly in samples of oil which have been desiccated by chloride of calcium. This camphor not having any commercial value its formation is undesirable, but as it results from a simple molecular change it may be difficult to prevent it; however, it is possible that the presence of a small quantity of water in the oil may at least retard it.

The difference of the boiling point of oil of patchouli from that of oil of cedar and of oil of cubebs may serve as a guide in testing a suspected sample; so also may the percentage of azulene.

Volatile oils exhibit great diversity in their action on polarized light, some being dextro-, others lævorotatory in various degrees. According to Gladstone ("Journ. Chem. Soc.," xvii., p. 3) the rotatory power (determined for a column of liquid 10 inches long) of the so-called "Penang" oil of patchouli is —120°, the same for cedar wood oil being +3°. The hydrocarbon of patchouli oil—patchoulene—

deviates the polarized ray —90°; the rotatory power of cubebs is recorded as +55°.

The same authority gives the sp. gr. of the three sorts of commercial oil of patchouli as follows: Indian, ·9554; Penang, ·9592; French, 1·0119; all taken at 60°F., and for their hydrocarbons:

	Sp. gr. at 20°C.	Boiling point.
Indian,	·9211	254 C.
Penang,	·9278	257
French,	·9255	260

Of course the addition of oil of turpentine would have the effect of lowering the sp. gr. and so counterbalance the adulteration of ol. copaibæ, but the application of Professor Dragendorff's test should detect this ("Pharmaceutical Journal," [3d series], vi., p. 541).—*Phar. Jour. and Trans.*, Nov. 20, p. 409.

INDIAN HENBANE.

By W. Dymock.

Henbane, though a native of the Himalayas, was probably unknown as a medicine to the acient Hindu physicians. "Parasika-yamani" and "khorasani-yamani," the names which it bears in some recent Hindu books, indicate its foreign source. Mahometan writers call it "banj," an Arabic corruption of the Persian "bang." They say it is the "afeekoon" of the Greeks, the "azmalus" of the Syrians, and the "katfeet" or "iskeeras" of the Moors. They also add that in the Deilami dialect it is called "keer-chak," because the capsules resemble a little basket with a cover, such as the Arabs make out of date leaves and call "kafeer." Meer Muhammed Husain's description of "banj" in the "Makhzan-ul-adwiya" agrees well with the genus *Hyoscyamus*. He says there are three kinds, white, black and red, and that the white is to be preferred. He mentions the preparation of a sun-dried extract from the juice of the fresh leaves, and says that the leaves are also pounded and made into a paste with flour, out of which small cakes are formed, which when dry retain their medicinal properties for some time.

Henbane is described by eastern writers on materia medica as intoxicating, narcotic and anodyne. Amongst the many uses to which it is put the following may be mentioned as peculiar to the East: A poultice of the juice with barley flour is used to relieve the pain of inflammatory swellings; the seeds in wine are applied to gouty enlargements, inflamed breasts and swelled testicles. About ½ drachm of the seeds

with 1 drachm of poppy seeds are made into a mixture with honey and water and given as an anodyne in cough, gout, etc. Equal parts of the seed and opium are used as a powerful narcotic. A mixture of the powdered seeds with pitch is used to stop hollow teeth which are painful, and also as a pessary in painful affections of the uterus. The juice or a strong infusion of the seeds is dropped into the eye to relieve pain. Ainslie and other European writers upon Indian materia medica notice the use of hyoscyamus seeds in India and attribute them to *H. niger*, but I have not heard of anyone who has raised this plant from the bazaar seed. In the "Mufaridat-i-Násari" it is distinctly stated that the officinal article should be the seed of white henbane (bazr-ul-banj-abiad).

Henbane seed is the only part of the plant used in native practice in India; it is known in Hindostan as "khorasani ajwain," in Bombay as "khorasain owa," and in Madras as "khorasain omam."

For the purpose of supplying government hospitals with extract and leaves the *Hyoscyamus niger* has been cultivated at Saharunpore in the Bengal presidency, at Hoonsoor in Mysore and at Hewra, near Poonah in the Deccan. The quantity grown is limited to the requirements of goverment. It is a cold weather crop. If sown in October, the plants will produce ripe seed in March, or even earlier. As regards medicinal qualities, the experience of medical men in India is that the plant cultivated for government yields preparations in every respect equal to those obtained from Europe. Dr. O'Shaughnessy found that 3 grains of the sun-dried extract produced marked soporific and anodyne effects.

At present henbane leaves are not an article of commerce in India, but the superintendents of the government gardens are, I believe, allowed to grow any profitable crops of medicinal plants for sale. The price charged by the Hewra gardens to the medical department this year for dried leaves is Rs 1½ per lb., and for extract Rs 4 per lb.

The price of the imported seed in the Bombay market is usually Rs 7 per maund of 37½ lbs.—*Phar. Jour. and Trans.*, Nov. 6, 1880.

Medicated Bougies. By F. Fridrichs.—Melt together white gelatin 3 parts, glycerin 6 parts, distilled water 1 part; then add the desired medicament and draw the mass into a glass tube of suitable size, which has been previously oiled. After cooling, the mass is pushed out by means of an oiled rod, and cut into pieces of suitable length.—*Phar. Zeitung*, 1880, p. 629.

THE BARK OF ALSTONIA SPECTABILIS.

By O. Hesse.

Alstonia bark, the "cortex Alstoniæ" of pharmacognosists, is nearly allied to dita bark. This bark, which in Java is called "poelé," comes from the *Alstonia spectabilis*, R.Br., a species which from its characteristic properties has been named by De Candolle, *Blaberopus venenatus*. This *Alstonia* grows in Timor, the Moluccas, and in the eastern parts of Java, especially in the neighborhood of Malang.

Wiggers, on his "Pharmacognosie," ("Pharmakognosie," 5th edit. 1864, p. 358), gives an extremely true description of this bark, to which I would refer.

Poelé bark differs from dita bark not alone by its extraordinarily bitter taste, but also in its anatomical structure. For comparison a specimen of dita bark was obtained, which was apparently stem bark, and a branch bark of the other kind. Herr Professor Ahles, who has examined both barks microscopically, kindly tells me that the difference in the structure of the two barks does not depend alone upon their age, but also upon the peculiarities of the respective plants.

Formerly the poelé bark was used in Java against fever with favorable results, and in Batavia especially it came much into use for this purpose. Apothecary Scharlée ("Geneeskundige Tijdschrift voor Nederl. Indie," vol. x, p. 209, 1863,) there examined this bark and found in it a special alkaloid, which he named "alstonine." This was occasionally prepared in Batavia, but does not appear to have ever come into use either in the hospitals or in private practice.

As the name "alstonine" had already been given to a substance obtained from the Australian *Alstonia*, I have before proposed that Scharlée's alkaloid might be named "alstonamine." In the following remarks I shall use this name for the alkaloid in question.

Scharlée obtained the alkaloid by extracting the coarsely powdered bark with alcohol, and after previous filtration precipitating the tincture with tannic acid. The white flocculent tannate was washed with water, suspended in alcohol, and decomposed with freshly precipitated lead hydrate. The alcoholic solution, upon evaporation over sulphuric acid, yielded the alkaloid in brilliant oblique rhombs and prisms. In its reactions it presented relatively great similarity to ditamine. But from this alkaloid it differs, as also from echitenine, by its power of easily crystallizing.

Further, that it cannot be echitammoniumhydroxide is evident from the following experiment. Freshly precipitated echitammonium tannate in alcoholic solution was treated with freshly precipitated lead hydrate, but was not decomposed by it. This result is not surprising, as it is known that echitammoniumhydroxide separates lead hydrate from its combinations.

Consequently, there is in alstonamine an alkaloid differing from the alkaloids of dita bark (this Journal, 1880, p. 620). In order to obtain further information upon the nature of this alkaloid, I undertook an investigation of poelé bark. I am indebted for a specimen to Professor Wiggers, who had obtained it some time ago direct from Batavia, possibly from Scharlée himself.

I first prepared an alcoholic extract from 50 grams of powdered bark. This was treated with dilute acetic acid, when a resinous mass was left which contained a considerable quantity of echicerin (this Journal, 1876, p. 370). The clear filtered acetic solution was then supersaturated with soda, shaken with ether, and this treated with acetic acid. After supersaturating this solution with ammonia the base removed from it by pure ether weighed 0·066 gram. It was found to be identical with ditamine.

The liquid left after treatment with ether was next supersaturated with potassium hydrate and shaken with chloroform. Upon evaporation of the chloroform solution, after washing with water, there remained a brown amorphous residue, which after treatment with hydrochloric acid gave 0·423 gram of echitammonium chloride.

The mother liquor was then again supersaturated with potassium hydrate and shaken with chloroform, which now upon evaporation yielded 0·042 gram of a mixed residue, consisting of an amorphous alkaloid and one crystallizing readily from chloroform. The crystals were concentrically grouped prisms and behaved towards nitric acid like ditamine. The substance was repeatedly dissolved in chloroform and upon evaporation of the solution obtained again unaltered. The small quantity of this substance which I thus obtained, though not sufficient for further experiment, was sufficient to ascertain that it was not ditamine, echitenine or echitammoniumhydroxide. As besides this no other crystallizable alkaloid could be observed in this alstonia bark, I assume that these crystals were actually Scharlée's alstonamine.

As to the amorphous portion, in which these crystals were imbedded, it corresponded in its behavionr with echitenine.

The quantity of bases present in 100 parts poelé bark accordingly amounted to

0·132 Ditamine.
0·808 Echitammoniumhydroxide.
0·080 Echitenine and Alstonamine.

In order, therefore, to obtain a sufficient quantity of alstonamine for a thorough investigation a considerable quantity of poelé bark would be required. Unfortunately I have not been able to procure such a quantity, so that I must desist from the further examination of this alkaloid.

One result of especial interest is that the bark in question contains more than six times as much echitammoniumhydroxide as does dita bark, in which I found 0·13 per cent. It may be observed that the action of this alkaloid and its chloride upon the animal organism is similar to that of curare, so that it probably follows that persons who are treated with this bark for the relief of intermittent fever would undergo a more or less powerful poisoning.—*Pharm. Jour. and Trans.*, Nov. 6, 1880, from *Ann. d. Chem.*

Tinctura Rusci.—A correspondent inquires for a formula for this tincture, which is recommended for ringworm, by Prof. Kaposi, in Hebra's work on skin diseases.

Of the genus Ruscus, which is classed with the smilaceæ or liliaceæ, three species have been employed medicinally, all of which are indigenous to Southern Europe, one, R. aculeatus, *Lin.*, or butcher's broom, being also found in England. The rhizome, known as *radix rusci* or *brusci*, possesses aperient and diuretic properties, and was formerly much used in visceral diseases. This is doubtless the species employed for the above tincture, but we have been unable to find a formula in old and recent works, though several give directions for decoctions. Since the dose was from 10 to 30 grains in powder, the tincture is, perhaps, best made of 20 parts of the powdered drug, exhausted with sufficient dilute alcohol to obtain 100 parts. The taste is disagreeable, sweetish and bitter.

The other two species referred to are Ruscus hypophyllum and R. hypoglossum, *Lin.*, the former of which was known as *laurus alexandrina*, the latter as *bislingua, uvularia* and *laurus alexandrina angustifolia*. The root and evergreen leaves were employed in diseases of the uterus and bladder. J. M. M.

Tinctura Stillingiæ.—I send you an excellent formula for this tincture. Take of stillingia root (fresh) *eight ounces*, diluted alcohol *two pints*, nitric acid *half fluidounce*. Mix. Macerate fourteen days; express and filter. Dose, five drops in water, three times a day, gradually increased. As *nitrates* are soluble, the addition of a small quantity of nitric acid to all tinctures made by maceration greatly increases their value.

J. DABNEY PALMER.

Montieello, Fla.

Saxolinum is the name selected by a sub-committee of the Committee on Revision of the U. S. Pharmacopœia to designate soft paraffins to be used in ointments, etc., similar to those preparations introduced as vaseline, cosmoline, petroline, etc. The word is derived from *saxum*, rock, and *oleum*, oil, and, though the article in question is not an *oil*, as this term is at present received in chemistry, the new word will probably be adopted by the committee.

MINUTES OF THE COLLEGE.

PHILADELPHIA, Dec. 27, 1880.

A stated meeting of the Philadelphia College of Pharmacy was held this day at the College Hall, Dillwyn Parrish, President, in the chair; fourteen members in attendance.

The minutes of the last meeting were read and, on motion, approved.

Wm. C. Bakes, Secretary of the Board of Trustees, read the minutes of that body for October, November and December, which were, on motion, adopted.

The resignations of Messrs. Thomas R. Coombe and George Blinkhorn were read and, on motion, accepted.

Professor Maisch called the attention of the meeting to a bill which originated with the National Board of Health, and is now before Congress. The act is designed to prevent the importation and dealing in of articles of food and drugs of all kinds which have been adulterated or rendered impure or unwholesome from any cause whatever. Professor Maisch read the act, and, after expressing his views in accordance therewith, thought the College should take some action on the subject.

Professor Remington and Wm. B. Thompson agreed with the views expressed by Professor Maisch, and hoped that the enactment might be so framed as to embrace in some manner State legislation also.

Professor Maisch moved that a committee of three be appointed to take action in the matter, with power to confer with committees of other bodies enlisted in the same cause, which was adopted.

The president appointed Mesrs. Robert Shoemaker, Professor Joseph P. Remington and Charles Bullock the committee.

There being no further business, on motion adjourned.

WILLIAM J. JENKS, *Secretary.*

MINUTES OF THE PHARMACEUTICAL MEETING.

On motion of Prof. Remington, Mr. Alonzo Robbins was called to the chair; the minutes of the last pharmaceutical meeting were read and, on motion, approved.

Prof. Sadtler read a paper upon a coloring matter taken from a wood from South Africa; it was first imported by a dealer in archery implements, who employed it in making bows, it being very strong and elastic. The tree which produces it is unknown, but the wood is called *Bethabara wood*. The paper was accompanied with specimens, and some of its reactions with caustic potassa in comparison with hæmætoxylin were exhibited. Prof. Sadtler will continue his researches upon the coloring matter.

A very interesting paper upon the *extraction of colchicia from the seeds*, by Mr. L. I. Morris, was read and elicited some discussion; upon motion, it was referred to the Publishing Committee.

Prof. Remington read a paper upon the *orthography of the units of the metric system*; the paper was litened to with a great deal of interest and elicited a number of comments; upon motion, this paper was also referred to the Publication Committee.

Prof. Maisch presented to the Cabinet specimens of asbestos from Pennsylvania, and of a bark evidently derived from one of the Lauraceæ which had found its way to Europe and was, doubtless, used for sophisticating powdered cinnamon; its origin is as yet unknown.

There being no further business, on motion, adjourned.

T. S. WIEGAND, *Registrar.*

Philadelphia, Dec. 21, 1880.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

CALIFORNIA COLLEGE OF PHARMACY.—The lectures in this institution closed October 29th; the examinations commenced November 1st, and the commencement took place December 7th. The number of students in attendance at the lectures was eighty, and of the graduates eight, from twelve examined. Three prizes had been offered, of which S. Oberdeener received the gold medal, F. Lengfeld a set of reagents and cabinet, and W. P. Morrison $20.00, or its equivalent in books.

An examination of the junior students was also inaugurated, to decide their eligibility to become second course students.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A pharmaceutical meeting was held December 1st, Mr. T. Greenish, President, in the chair.

Dr. Symes exhibited a number of samples of *cane sugar*, and stated that sugar as usually sold contained ultramarin. Two English samples consisted of the same sugar, one having a tinge of yellow, the other being of a pure dead white, the only difference being the addition of coloring matter to the latter. German sugar was usually more loaded with blue than English samples. Sugar refiners could get one shilling a hundredweight

more for sugar containing a trace of blue than for the pure article. He believed that if pharmacists found it desirable to have pure sugar, the refiners would place it in the market. When a sugar containing a decided blue tint was used for acid syrups, an unpleasant odor of hydrosulphuric acid appeared after a time.

Mr. Plowman spoke of a sample of sugar which, when used for syrup of phosphate of iron, gave off a strong odor of sulphurous acid. Dr. Symes suggested that the sulphurous acid might probably have been used for decolorizing the sugar. Various processes for decolorizing sugar were mentioned, and Mr. Cleaver referred to Dutch sugar, a great deal of which contained much calcium phosphate; the same residue was found in some of the sugar of a Liverpool firm.

Two samples of *resorcin* were exhibited by Dr. Symes, one being of a mahogany color and having something of the smell of carbolic acid, the other being much lighter, though not pure. Resorcin had been used as a coloring matter; when pure it ought to be in perfectly white crystals; 100 parts of water dissolve 80 parts of resorcin, but he found benzol and benzolin to have scarcely any solvent action. It had been given in doses of from 3 to 5 grams within twenty-four hours. As to the dose, Mr. Greenish remarked it could be scarcely defined when the substance contained an unknown amount of impurity.

An interesting paper on the *history of saffron* was read by Mr. Chas. B. Allen, in which the author called attention to the very extensive use of saffron as a condiment in Cornwall.

The use of saffron in the Pharmacopœia was discussed in a paper by Mr. E. M. Holmes, in which the origin of the use of saffron in medicine was inquired into, and numerous authorities were quoted, showing that it is not now believed to possess any real activity. "But my object in calling attention to the use of saffron in the Pharmacopœia," continued the author, "was to demonstrate that in future Pharmacopœias it might, with advantage, be omitted from all the preparations, except a tincture or a syrup, or, preferably, a glycerol of saffron . . . It is obvious that there is something to be gained by the omission of saffron from the above-mentioned tinctures, for the nearer the approach to a universal formula for such preperations as are used in every Pharmacopœia the less difficulty and delay there will be for the dispenser of foreign prescriptions in different countries, and the greater satisfaction there will be to the patient, whose belief in the non-identity of the medicine, arising, perhaps, from a slight difference of tint of the liquid, is in some cases liable to nullify the good effect of the prescription; in other words, the curative power of faith may be suspended by a want of exact uniformity in the appearance of the medicine. Again, in those preparations which have replaced patent medicines, it is evident, if the drugs which the medical profession consider worthless, or nearly so, and which may be traced back to astrology, are retained, that the Pharmacopœia is descending to popular prejudice, and is attempting to formulate for trade preparations rather than for the medical profession."

In the discussion, following the reading of the two papers, Messrs. Gerrard and Collier corroborated the views of Mr. Holmes and pointed to

a number of hospitals where the saffron was omitted from the preparations without detriment. Prof. Redwood, however, was not thoroughly satisfied that saffron could do no good at all, and should hesitate to join in that onslaught upon every constituent and preparation in the Pharmacopœia which could not be clearly shown to possess very decided therapeutic value. Somewhat similar views were expressed by several other members, and the frequent *adulteration of saffron* being alluded to, Mr. Tanner showed a sample adulterated with some red ferruginous earth, the adulteration being easily detected by placing some of the saffron in water, when the water becomes turbid immediately from the separation of the adhering particles.

Mr. Allen described Dr. Symes' process for making *syrup of saffron* by first preparing a concentrated infusion from a given quantity of saffron, pouring it upon a calculated amount of sugar, drying the mixture, and then dissolving 6 grams of this sugar in 2 grams of water. He prepared a *glycerol of saffron* in the ordinary way of a syrup, according to the London Pharmacopœia, with the exception that, instead of mixing with sugar, he uses equal quantities of sugar and of glycerin. The product had kept well for three years, would mix with water in a capital manner, and was free from deposit for a considerable time. Tincture of saffron does not give such a satisfactory result as the glycerol on being mixed with water.

EDITORIAL DEPARTMENT.

THE RELATION OF MEDICINE AND PHARMACY has recently been the subject of discussion between members of both professions in this city, and has not unfrequently been alluded to in medical journals. That abuses exist will be acknowledged by all who are unbiased; to assert that they exist in one profession only, and that the members of the other are entirely without fault, is noticing the splinter in the neighbor's eye without discovering the beam in one's own eye; to charge such abuses to the professions, instead of to the individuals guilty of them, is decidedly wrong. We have abundant proof of the fact that the extreme views advocated by a few physicians and pharmacists, laying the blame for existing evils altogether before the other door, are not shared by the calmer and reflecting members, and it gives us pleasure to reproduce an editorial from the "Medical Bulletin" of September, 1880, in which some of the evils complained of, and some of the remedies suggested, are calmly and fairly discussed:

The proper relations between these two professions, or, better, these two branches of our profession, have been for some time a subject of lively controversy, and, in view of the likelihood of an early animated discussion of this matter, the "Bulletin" gives below its views on the subject.

That there has been a tendency among "Druggists" (we apply this term to the drug vendors in contradistinction to the word "Pharmacist," which is applicable only to the scientific compounder, chemist and investigator of remedial substances and their therapeutical merits) to take unto them-

selves part of the physician's work in prescribing and attending to persons afflicted with disease, to compound and repeat prescriptions contrary to the wish and order of the physician, to antagonize often by substitution and sophistication the physician's best intentions for his patients, and by exorbitant charges for medicines to often prevent patients from employing private medical aid, driving them thus into charitable institutions, or the arms of practitioners of rival schools, thereby endangering the health of the community and exerting a detrimental influence against the medical practitioners, their natural allies, are the grave charges which are brought against the members of the pharmaceutical profession, and which in many instances, no doubt, are well founded.

The cause of all this trouble must be looked for in the overcrowding of both professions. Like all abuses in social relations, by their going too far they correct themselves, we think that this as well as others will regulate itself without active interference in its machinery. Just as soon as people will find out that ours is not "such a nice, easy business," that the druggist is not coining the money the public imagines, despite of his immense profits, that with the same amount of exertion they could do better in some of the other vocations of life, the ranks of the aspirants for medical honors will be thinned out, and the corner drug stores will be turned into grocery, dry goods or stationery establishments.

But as this process is necessarily a slow one, and our young practitioners would like to experience the benefit of these reforms, the propositions to remedy the evil have been varied and many.

We would state here that in Philadelphia, the principal centre of pharmaceutical education in this country, we have in the legitimate and prominent members of the pharmaceutical profession less of the above abuses to contend with than in other cities, but still the clamor for reform even here is heard, and no doubt many will be the plans for relief.

We hear of some advising "to dispense our own medicines," to, homœopathist-like, travel with satchel and deal out remedies at the bedside. That they will admit by this that our method is a failure, and that we must follow homœopathy to be saved, is the natural inference therefrom. What impressions they are apt to create by doing so is well expressed in one of our recent exchanges, which goes on thus: "Those practitioners in larger towns, who will insist on dispensing their own remedies in order to increase their revenues, by forcing people to come again, must not forget that they are struggling against the tide of progress, and they will probably learn, to their dismay, sooner or later, that they cannot turn back its flow, while they themselves will be rated with the Indian doctors, water doctors, root and herb doctors, and all that ilk."

That hundreds of years ago the physician already dispensed his own medicines, that it was then deemed necessary to separate the branch of Pharmacy from Medicine proper, in order to bring it up to its full development, but they seem to overlook the fact that, if the busy practitioner would have thus continued, we would probably not have been blessed with the discovery of morphia, quinia, etc., and such men as Scheele, Liebig and others, who were but allies of our profession, would not have advanced our science and the general welfare with giant strides far beyond all expectations.

The study of materia medica and the complexus of chemical and pharmaceutical knowledge necessary for the practice of pharmacy would not alone retard medical progress, but would be at best imperfectly accomplished by one whose mind is so largely taken up by his proper professional studies. To quote the words of our distinguished Professor of Materia Medica and Therapeutics, Dr. Roberts Bartholow, in his introductory lecture at the Jefferson College: "The best students who make the attempt to master the details of materia medica, acquire but a vague notion of it, and drop the study as soon as possible, except those who expect to combine

the business of pharmacy with the practice of medicine—*a union which always results unhappily, and is not to be approved.*"

Again we hear our reformers proclaim that then "we will club together, purchase drugs with our own money, have a room for the purpose, and have some one to specially compound our prescriptions." A most excellent idea, no doubt, but as impracticable and short-sighted as the former. They forget that, first of all, the laws for this city do not authorize physicians to practise pharmacy unless he be a graduate or licentiate of pharmacy; and even were they to delegate this to a proper person they would soon find themselves involved in a commercial speculation that would cost them dearly, and as much at their dispenser's mercy than they formerly were at that of their druggist's. Besides, the public learning of their enterprise would soon interpret it for a money making speculation, shun the co-operative pharmacy and perhaps the stockholding doctors as well.

But, supposing that either or both of these plans were perfectly feasible, the question arises, what would become of the druggists, would they quietly submit to this starving out process? We are afraid not, for with our present facilities we fear that very soon the ranks of the medical profession in this city would be augmented by about seven hundred new recruits, and not despicable ones either, for once legalized and on an equal basis with us, with their opportunities of coming constantly in contact with the suffering public looking for aid and relief, we are inclined to think that they would make sad havoc with many of our young medical friends.

In conclusion, we call the attention of the readers of the "Bulletin" interested in this subject to a paper read at the International Congress in this city, in 1876, entitled "Relations of Pharmacy to Medicine," by Ezra M. Hunt, and published in its Transactions, page 1075, which offers a solution of the question, and deserves mature thought and ample deliberation before steps are taken that will soon be regretted and abandoned.

We quote from it the following passages, as having a direct bearing on the subject:

"The first step in remedying this evil must be to hold pharmacy to accountability and reliability by making it a part of the profession of medicine. It must, like ophthalmology and gynæcology, be made a specialty, only because it may not be practicable for each practitioner to attend to every department of medicine, and in order that, by giving more time for study, greater accuracy thereby may be attained."

Again: "If a physician cannot keep a modern pharmacy, as certainly he cannot consistently with proper professional feelings, I do not quite see how he can suitably patronize one; it would be well if it were practicable for every physician to refuse to send prescriptions to be compounded by any save those licensed in medicine, who, having chosen this as their specialty, were bound in ethical propriety not to prescribe, to sell and compound only in recognized pharmacy, and to hold themselves in the same relative position as a part of our profession, as do others who pursue a particular branch."

And, finally: "Instead of leaving the pharmacist outside, let us invite him within the boundaries of legitimate practice, and let him become imbued with the *esprit de corps*, which belongs to a noble profession."

Combining the practice of medicine and pharmacy is an evil which is being more and more recognized in all sections where it still exists. This journal has, from its very beginning, been an earnest advocate of the complete separation of the two professions, and while we do not believe that, by virtue of his education, the physician is proficient in pharmacy, we have always held that the pharmacist, through his education, is not capable to act as physician; nor do we regard it possible that persons are likely to

become adepts in both professions. For very good reasons, the Colleges of Pharmacy withhold from their graduates the title of *doctor;* when a druggist or pharmacist desires such a handle to his name, we have no fault to find, if he studies medicine sufficiently to pass the requisite examination; but, as we object to physicians practising pharmacy, so we object to pharmacists practising medicine; in other words, we regard the union of the two professions by one individual as an unmitigated evil, whether that individual be a physician or a pharmacist. On this subject the "College and Clinical Record," of Nov. 15, has published an editorial under the caption of "Where shall this prescription go?" which we feel sure will be perused with interest by our readers. It is as follows:

In England a movement is on foot, having for its object the separation of the general practitioner from his shop, on the ground, taken by the profession in this country many years ago, that such a combination retards the advance of both pharmacy proper and medical science. As there is strong feeling upon the subject, it is probable that this measure will be successful, at least in the large cities, and there it will soon be considered, as it is here, undignified, to say the least, for a practitioner of medicine to be at the same time the proprietor of a shop where segars, hair dye, mint-sticks and proprietary medicines are sold.

While congratulating ourselves and American physicians upon the great advantage made on this side of the Atlantic, in both medicine and pharmacy, on account of the happy separation which permits men to devote themselves fully to their chosen vocation; we must not forget that there are constantly disintegrating forces at work, which require watchful care. Nothing mundane can be considered as absolutely irreversible *Tempora mutantur et nos mutamur in illis.* If we have entered into the possession of a legacy, which our pioneers in medicine had wisely planned and with great effort firmly established, it is a matter of honor with each member of the profession to transmit it untarnished to those who come after. We notice, therefore, with apprehension the increasing number of druggists who are coming out of their proper sphere and taking degrees at our medical schools, with the view of combining medicine and pharmacy in their practice; we notice with regret that our medical schools especially encourage such men to graduate by granting diminished fees and materially reducing their course of study. It does not seem to be remembered by the druggists that after they begin to practise medicine they cannot hope for other physicians to recommend their patients to go to their stores for prescriptions, such blindness to individual interest is entirely out of the question; it does not seem to be remembered by the faculties of our colleges that these men engaged, as they are, in a profitable trade in specifics, homœopathic medicines and patented preparations make no pretense whatever of being subject to the ordinary ethics of the profession as laid down in the Code of Ethics of the American Medical Association; nor can they become members of our county medical societies until they give up the sale of patent medicines. This is a subject which we will return to again.

In the meantime, when our patients inquire "Where shall this prescription go to?" we answer "Anywhere, except to a druggist who practises medicine."

Orthography of the Metric Units.—Prof. Remington's paper on this subject, which is published on pp. 9 to 12 of the present issue, is an excellent pleading for retaining the French orthography unchanged in English; but we do not regard the arguments advanced as overwhelming.

If the statement that certain changes were made in the names of the units in a *few nations* was taken to apply to the adoption by most nations of the unchanged French orthography it would be erroneous; for in Portuguese, Spanish, Italian, German and Dutch, and undoubtedly in other European languages, the French terms have been adopted, but in *all* cases the orthography was modified so as to adapt it to the language of the country. This certainly cannot be called *caprice*. Precisely the same course is proposed for the English language. It is true that the latter has adopted numerous French words without change of orthography, but it is equally true that in a large number the spelling has been slightly changed, even when the French termination has been *re;* render, encounter, powder, batter are examples which could be multiplied without difficulty. The French employ the word mètre for the abstract measure as well as for the measuring instruments; the latter are rendered *meter* in English (pyrometer, barometer, thermometer, etc.), and the instrument used for measuring the metric unit of length should therefore likewise be called a meter. Why change the spelling for the unite itself and make a metre (the abstract measure) to be measured by a meter?

The apparently most weighty objection is the great similarity of the word *gram* with *grain;* but the danger is not near as great as it might appear to be at first sight. The abbreviation for gram as adopted in the scientific literature of Central and Northern Europe is *grm.*, or *gm.*, and in France and Italy it is usually *gr.;* in the latter case it is identical with, in the former sufficiently distinct from, the universally acknowledged abbreviation for the word grain. In formulas it is scarcely possible to mistake the one value for the other, because the quantities of the different ingredients would indicate at once whether gr. referred to a value of the old or the metric system. And in prescriptions there is even less likelihood to confound the two, because from long-established custom grains are indicated by Roman numerals, while metric values are designated in the ordinary Arabian numerals, without the addition of any sign or letter. In the metric prescriptions of Continental Europe 10·0 means ten grams, while in the old style ten grains are designated gr x.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Historical Sketch of the Progress of Pharmacy in Great Britain. By Jacob Bell and Theophilus Redwood. London, 1880. Pp. 445.

The first part of this work was written by the late Jacob Bell as an introduction to the "Pharmaceutical Journal." It contains an account of the early, but unsuccessful attempts made to separate pharmacy from the practice of medicine in Great Britain, and of the efforts which, at a later period, were unsuccessfully made to found an institution with the object of raising up a race of qualified men devoted to the practice of pharmacy as a distinct occupation. The second part was written by Professor Redwood in compliance with a desire of the Pharmaceutical Council, and is a record

of events and the results of operations which have taken place from the founding of the Pharmaceutical Society of Great Britain until the passing of the Pharmacy Act of 1868.

The work possesses a lasting value as a faithful record of historical events connected with pharmacy in Great Britain, and is creditable alike to the authors and to the society by whom it was issued.

Lehrbuch der Physik. Bearbeitet von Professor Dr. C. Fliedner, Gymnasialprorektor, etc. Mit 348 Holzstichen und 7 Tafeln. Zweite Auflage. Braunschweig, 1880. Fr. Vieweg & Sohn. 8vo, pp. 463.

Manual of Physics. By Prof. Dr. Fliedner. With 348 wood cuts and 7 plates. 2d edition, revised and enlarged.

A work from such an experienced teacher in natural philosophy and mathematics as the author may be expected to possess merits which render it especially adapted for the purpose intended, namely, to furnish a faithful guide to more advanced students, leaving nothing of importance unexplained, without interfering with the teacher in the arrangement and extent of the details. The author very properly favors the inductive method of instruction, without, however, leaving out of view that in those cases where many facts are generally known, the deductive method is far more interesting and instructive. A fair knowledge of mathematics is, of course, requisite for the understanding and explanation of physical laws, but no undue prominence is given to that discipline.

The work is divided into two parts; the first comprising physics of matter, and the second, light, caloric, magnetism and electricity. A portion of the chapters on light and caloric are from the pen of Dr. Krebs.

As a text-book for the more advanced pupils, as well as for self-instruction, the work is admirably adapted, and the numerous excellent illustrations enhance its value, as they embellish its appearance.

Aufgaben aus der Physik. 8vo, pp. 165.
Auflösungen zu den Aufgaben aus der Physik. 8vo, pp. 191. Von Prof. Dr. Fliedner. Braunschweig, 1880. Fr. Vieweg & Sohn.

Problems in Physics—and Solution of the Problems in Physics.

These two works are well adapted for the instruction in the practical application of the physical laws. Calculation and geometrical construction are kept in view without giving undue preponderance to either. The problems are in most cases such of practical applicability, and may be used in connection with any work on physics. An appendix contains a number of valuable tables on physical subjects, such as comparison of measures, length of pendulum, specific gravity, expansion, specific heat, melting and boiling points, etc.

Diet for the Sick. Notes, Medical and Culinary. By J. W. Holland, M.D., Professor of Materia Medica, etc., in the University of Louisville. Louisville, 1880. J. P. Morton & Co. 24mo, pp. 68. Price 25 cents.

A convenient and instructive little book, the first one of "Morton's Pocket Series."

Report of the Board of Health of the State of Louisiana for the year 1880. New Orleans: J. S. Rivers. 8vo, pp. 149.

A general description of the State of Indiana, extracted from the first annual report of the Bureau of Statistics and Geology for 1879.

A Chart for the Chemical Examination of Urine. By Prof. William L. Dudley, Miami Medical College, Cincinnati.

Réponse à une note de M. A. Riche sur la reduction du chlorure d'argent par la lumière, par le Dr. D. Tommasi.
Reply to a note of M. A. Riche, on the reduction of silver chloride by light.

Higher Education of Medical Men, and its influence on the profession and the public. Address by F. D. Lente, A.M., M.D., President of the Amer. Acad. of Medicine. New York: Ch. L. Bermingham & Co. Pp. 16.

The Symptoms of Sexual Exhaustion (Sexual Neurasthenia). By Geo. M. Beard, A.M., M.D. Baltimore: Practitioner Publishing Co.

Gastrostomy. By L. L. Staton, M.D. Tarborough, N. C. Pp. 6.

OBITUARY.

DR. GEORGE ROSS died at Lebanon, Pa., November 30th, in the sixtieth year of his age. He was a native of Elizabethtown, Pa., learned the drug business at Harrisburg, and was afterwards for about eight years in business in his native town, during which time he studied medicine, graduating from the Jefferson Medical College in 1849. Since 1852 he resided at Lebanon, carrying on the drug business. He held numerous offices of trust and responsibility, and was an active member of the Pennsylvania and American Pharmaceutical Associations. Honorable and energetic in his dealings, kind and friendly in his intercourse with others, faithful and prompt in the discharge of his duties, he leaves a large circle of friends to whom he had become endeared through his genial qualities.

SAMUEL E. WILSON, a native of Virginia, but a resident of Texas, died in Philadelphia, December 3d, where he temporarily resided, attending the College of Pharmacy. He was a faithful and earnest student, who had secured for himself alike the regards of his teachers and fellow students. The senior class, of which he was a member, took the following action:

WHEREAS, It hath pleased Almighty God in His wise providence to remove from our midst our esteemed friend and fellow student, Mr. Samuel Eston Wilson, of Terrell, Texas, therefore be it

Resolved, That it is but a just tribute to the memory of the departed to say that in regretting his removal we mourn for one who was, in every way, worthy of our respect and regard.

Resolved, That we sincerely condole with the family of the deceased in their affliction, and commend them for consolation to "Him who doeth all things well," and whose chastisements are in mercy.

Resolved, That engrossed copies of these resolutions be transmitted to the widow and parents of the deceased, that they be printed in the "American Journal of Pharmacy" and "Terrell Times," and also entered upon the minutes of the Zeta Phi Society.

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Kremer, W. Harry,			
Lacy, Wm. Reif,	Reading,	Pa.	J. W. Simpers.
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Lascheid, Peter William,	Pittsburg,	Pa.	Urben & Co.
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